



Natural Resources Conservation Service

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National Resources Inventory

Resources of Washington Series

IRRIGATION RESOURCES OF WASHINGTON 1982 - 1997

(Revised December 2000)

Water, the lifeblood of the west, is a most sought after resource. In western Washington, irrigation is often important to agriculture. In eastern Washington, irrigation is vital to the success of agriculture and those who serve the state's largest industry. Irrigated agriculture is big business and water availability is the key to success. This FACT Sheet discusses trends in the use of irrigation water for the many high value crops grown in Washington.

Sources of irrigation water are changing. Crops grown with available water are changing and the geography of water use is changing. While there is no more fresh water in Washington than at the time of the early settlers, man has devised many ways to use, divert and store water for beneficial uses. Agriculture is the largest user of fresh water but there are many competitors. These competitors include residential, industrial, municipal, recreational users and fish and wildlife. Each needs water to survive and prosper. Water users have both rights and responsibilities. With the emphasis on water quality and quantity, all water users must work together to conserve and protect Washington's fresh water supplies.

The "quantity and quality" of water available to the residents of Washington is a concern for people, fish, wildlife and industry. Making wise use of available water resources, developing additional sources and managing the use of current water resources is a key for the future of agriculture in Washington.

Water resource planning must address issues such as: fish and wildlife needs, ground water and surface water quality concerns, individual water rights and many other issues. The agricultural industry is making progress in addressing issues such as sedimentation, undesirable vegetation growth in rivers and streams and transportation of pesticides in sediment laden runoff along with other issues.

Water conservation and water management planning are issues that cross all segments of the population of Washington and must therefore, be a shared responsibility. The Natural Resources Conservation Service, with the conservation partnership, will continue to support the wise use of water in the State through all of our programs.

Estimated Irrigation Use on Cropland and Pastureland in Washington

In 1982, 25% of the cropland and pastureland in Washington was irrigated. Fifteen years later, 31% of the cropland and pastureland was irrigated. The amount of irrigated farmland has not changed significantly, so the major change is the amount of acres not being converted to other uses.

About 1 million of these non-farmed acres have been enrolled in a temporary cropland retirement program and several hundred thousand acres have been converted to such uses as residential and commercial developments.

The overall amount of irrigated land and its relationship to non-irrigated land is changing but the trend may not be permanent. The methods by which irrigators are applying irrigation water is also changing. Pressurized irrigation systems are increasing while gravity irrigation systems are declining, some of these changes are subtle and some are highly visible. Water is conserved as pressurized irrigation systems replace gravity systems. Pressurized systems reduce the amount of furrow erosion and the subsequent leaching and transport of pesticides and nutrients which is commonly attributed to gravity systems. The expense of building and maintaining tailwater recovery systems is eliminated as fields are converted to pressurized irrigation systems. It is likely that both water availability and energy costs will have as much to do with future changes in irrigation as will commodity prices.

| | Non-irrigated | | Gravity Irrigated | Pressure Irrigated | Gravity and Pressure Irrigated | Total Irrigated Acres |
|------|---------------|--|-------------------|--------------------|--------------------------------|-----------------------|
| 1982 | 7,235,000 | | 582,333 | 1,145,700 | 132,200 | 1,860,200 |
| 1987 | 6,754,800 | | 554,000 | 1,169,700 | 152,200 | 1,875,900 |
| 1992 | 6,125,500 | | 509,400 | 1,156,400 | 256,700 | 1,922,500 |
| 1997 | 5,954,900 | | 466,700 | 1,237,200 | 190,500 | 1,894,400 |

Estimated Sources of Irrigation Water in Washington

Farm operators obtain irrigation water from many sources for their crops. In the 15-year period from 1982 to 1997, there have been some remarkable shifts in the sources of irrigation water used by farm operators. Thirty percent more acres are being irrigated from wells and 37% more acres are being irrigated from streams and ditches. Irrigation from lakes and ponds has greatly diminished. These are significant trends.

The increased reliance on ground water, as evident by the increased use of wells, means there are additional conservation needs for well-head protection. Well-head protection areas are prime locations where ground water can be contaminated from surface sources. Livestock, crops and humans can be directly affected by contaminated wells. As farm operators develop additional sources of ground water, they become less dependent on large scale federal and private irrigation developments. This allows farm operators more freedom on making planting and harvesting decisions. However, as reliance on groundwater increases so does concerns about water table levels dropping.

Irrigation trends indicate that water from streams and ditches is irrigating more acres of cropland and pastureland. In the Columbia and Yakima Basin areas, this means canals are either being extended or constructed. In northeastern Washington more operators are making additional use of perennial streams. These users of water from streams are more susceptible to drought and annual fluctuations in the water cycle.

Overall, irrigation with surface water is declining and the use of groundwater is increasing. Most irrigated crops depend on water from the Columbia River or reservoirs in the Cascade Mountains. Federal and private irrigation companies provide water from these sources.

| | Well | Pond / Lake | Stream / Ditch | Lagoon / Other | Combina- tion | Total Acres of All Water Sources |
|------|---------|----------------|-------------------|-------------------|------------------|-------------------------------------|
| 1982 | 346,400 | 608,700 | 793,500 | 6,100 | 105,500 | 1,860,200 |
| 1987 | 359,500 | 584,800 | 811,500 | 6,100 | 114,000 | 1,875,900 |
| 1992 | 448,200 | 490,500 | 843,700 | 13,800 | 126,300 | 1,922,500 |
| 1997 | 461,400 | 233,400 | 1,089,500 | 13,800 | 96,300 | 1,894,400 |

Estimated Acres of Irrigated Crop Types in Washington

Farm operators have made significant shifts in the types of crops being grown with irrigation water. Cultivated crops such as wheat have declined while non-cultivated crops such as vineyards, orchards and alfalfa have increased. Irrigated pasture has declined. On average, the crop types that are increasing need more water than the crops they are replacing. Increasing the efficiency of irrigation systems has allowed farm operators to make wise use of their water rights and shift production to more profitable crops. The expanded use of highly efficient pressurized drip/micro irrigation systems has been the most noticeable in vineyards and orchards. Improvements to pivot irrigation systems include low-head, high-volume sprinklers which reduce power consumption and redesigned spray patterns that more efficiently deliver water to crops.

It is likely farm operators and equipment suppliers will continue to improve irrigation efficiencies to make the best use of available water.

| | Cultivated Crop Acres | Non-cultivated Crop Acres | Pastureland Forage Acres | Total Irrigated Crop-land and Pastureland Acres |
|------|-----------------------|---------------------------|--------------------------|---|
| 1982 | 1,123,800 | 563,400 | 173,000 | 1,860,200 |
| 1987 | 1,090,000 | 600,300 | 185,600 | 1,875,900 |
| 1992 | 1,089,600 | 680,300 | 152,600 | 1,922,500 |
| 1997 | 1,021,600 | 757,300 | 115,500 | 1,894,400 |

Shifting Uses of Irrigation Water in Washington

The trends in where irrigation water is being applied are shifting across Washington. Irrigation is generally decreasing in western Washington, while irrigated land trends are increasing in central and northeastern Washington. In southeastern Washington there are year-to-year fluctuations but no major trend is evident. Irrigation will likely continue to slowly decline in western Washington as additional agricultural land is developed for urban use. Northeastern Washington is primarily dependent on surface water from perennial streams so unless storage facilities for water are developed, future increases in irrigation may be slight. The Central Basin area of Washington continues to develop additional irrigated land.

Grant County, in the central basin of Washington, is in the unique position of being one of the fastest growing portions of the State. This growth is both in population and in increased acres of irrigated land. Population and agricultural growth are sure to raise water supply and water quality issues in the near future.

| | Northeast Acres | Southeast Acres | Columbia Basin Acres | Northwest Acres | Southwest Acres |
|------|-----------------|-----------------|----------------------|-----------------|-----------------|
| 1982 | 108,900 | 331,800 | 1,316,100 | 70,200 | 32,400 |
| 1987 | 108,800 | 335,800 | 1,326,200 | 70,100 | 34,300 |
| 1992 | 112,900 | 345,800 | 1,363,300 | 67,300 | 32,300 |
| 1997 | 121,100 | 320,200 | 1,355,700 | 64,800 | 31,900 |